CLAIMS

We claim:

1. A method performed by a computer of processing digital images, the method comprising:

acquiring a digital image file containing a digital image from a digital image data source;

analyzing image data from the digital image file; and

adjusting the image data from the digital image file based at least in part on the analysis of the image data,

wherein the analyzing and the adjusting are performed automatically upon acquiring the digital image file.

2. The method of claim 1 wherein the digital image data source is a device selected from a group consisting of: digital camera, scanner, digital video camera, mass-storage device.

3. The method of claim 1 wherein the acquiring is initiated at a source location for the digital image.

4. The method of claim 1 wherein the acquiring is initiated at a target location for the digital image.

5. The method of claim 1 wherein the acquiring is performed via a wireless communication medium.

6. The method of claim 1 wherein the acquiring is performed via a network connection.

7. The method of claim 1 further comprising analyzing non-image information from the digital image file;

wherein the adjusting is based at least in part on the analysis of the non-image information.

8. The method of claim 7 wherein the non-image information comprises one or more of the following: flash information, focal length, shutter speed, camera model information, aperture setting, date/time information.

9. The method of claim 1 wherein the image data comprises pixel data for the image.

10. The method of claim 1 further comprising generating image characteristic data prior to adjusting the image data;

wherein the adjusting is based at least in part on the image characteristic data.

11. The method of claim 10 wherein the image characteristic data comprises image orientation data, and wherein the adjusting comprises adjusting orientation of the image based on the image orientation data.

12. The method of claim 10 wherein the image characteristic data comprises one or more of the following: image orientation data, red-eye detection data, blur data, color balance data, exposure data, noise data.

13. The method of claim 1 further comprising:

generating metadata corresponding to the adjusting; and

storing the metadata corresponding to the adjusting in the digital image file;

wherein the storing facilitates preservation of an original version of the digital image.

14. The method of claim 13 wherein the acquiring is performed in response to a request from a user-mode application, and further comprising:

providing the digital image file with the metadata to the user-mode application.

15. The method of claim 1 wherein automatic performance of the analyzing and the adjusting is selectively enabled or disabled by a user.

16. The method of claim 1 wherein the digital image file is a compressed digital image file.

17. The method of claim 1 wherein the digital image file is in a format selected from a group including at least: JPEG format, EXIF format, BMP format, TIFF format, PNB format, GIF format, WMF format, and EMF format.

18. The method of claim 1 wherein the digital image file is in an EXIF format.

19. The method of claim 1 further comprising repeating the acts of claim 1 for a plurality of digital images.

20. The method of claim 1 wherein the acts are performed in an operating system environment as a feature of the operating system environment.

21. The method of claim 20 wherein the operating system environment is a managed code environment.

22. The method of claim 1 wherein the acts are performed in a background service of an operating system environment.

23. A computer-readable medium having stored thereon a digital image processed according the method of claim 1.

24. A computer-readable medium having stored thereon computer-executable instructions for causing a computer to perform the method of claim 1.

25. A method performed by a computer of processing digital images, the method comprising:

upon acquisition of a digital image file containing a digital image:

analyzing image data from the digital image file;

adjusting the image data from the digital image file based at least in part on the analysis of the image data; and

generating metadata corresponding to the adjusting.

26. The method of claim 25 further comprising:

storing the metadata corresponding to the adjusting in the digital image file;

wherein the storing facilitates reversal of the adjusting.

27. The method of claim 25 further comprising:

storing the metadata corresponding to the adjusting in a second image file;

wherein the second image file comprises a second version of the digital image file.

28. A computer system comprising:

an image acquisition device for acquiring one or more digital images;

a memory for storing digital image data;

an image analysis software module for analyzing digital image data at image acquisition time; and

an image adjustment software module for adjusting digital image data at image acquisition time, wherein the adjusting is based at least in part on the analyzing.

29. The computer system of claim 28 further comprising an image output device for visually displaying digital images.

30. The computer system of claim 28 wherein the image analysis software module and the image adjustment software module are in an image acquisition service of an operating system.

31. The computer system of claim 28 further comprising:
an image decoder for decoding compressed digital image data; and
an image encoder for encoding adjusted digital image data.

32. The computer system of claim 28 wherein the image adjustment software module comprises one or more processing filters for adjusting the digital image data.

33. The computer system of claim 28 wherein the image adjustment software module comprises an extensible software architecture operable to allow customization of the image adjustment software module, wherein the extensible software architecture comprises one or more processing filters for adjusting the digital image data, wherein each of the one or more processing filters encapsulates an image adjustment function.

34. The computer image acquisition system of claim 33 wherein the customization comprises adding, removing or reordering processing filters in the image adjustment software module.

35. The computer image acquisition system of claim 28 wherein the image adjustment software module generates metadata corresponding to adjustments of the digital image data, and further comprising:

a metadata/image integrator for integrating the metadata into a digital image file containing adjusted digital image data.

36. A software system for processing digital images, the software system comprising:

means for acquiring a digital image;

means for analyzing digital image data for the digital image, wherein the means for analyzing analyzes the digital image data upon acquisition of the image; and

means for adjusting the acquired digital image based on the analysis of the digital image data, wherein the means for adjusting adjusts the digital image data upon acquisition of the image.

37. The software system of claim 36 wherein the acquiring is initiated at a source location for the digital image.

38. The software system of claim 36 wherein the acquiring is initiated at a target location for the digital image.

39. The software system of claim 36 wherein the acquiring is performed via a wireless communication medium.

40. The software system of claim 36 wherein the acquiring is performed via a network connection.

41. The software system of claim 36 wherein the means for analyzing further comprises means for analyzing non-image information from the digital image file.

42. The software system of claim 41 wherein the non-image information comprises one or more of the following: flash information, focal length, shutter speed, camera model information, aperture setting, date/time information.

43. The software system of claim 36 wherein the image data comprises pixel data for the image.

44. The software system of claim 36 further comprising means for generating image characteristic data prior to adjusting the image data.

45. The software system of claim 44 wherein the image characteristic data comprises one or more of the following: image orientation data, red-eye detection data, blur data, color balance data, exposure data, noise data.

46. The software system of claim 36 further comprising:

means for generating metadata corresponding to image adjustments; and

means for storing the metadata corresponding to image adjustments in a digital image file containing an adjusted version of the digital image;

wherein the means for storing facilitates preservation of an original version of the digital image.

47. The software system of claim 36 further comprising means for selectively enabling or disabling the means for adjusting.

48. The software system of claim 36 wherein the software system is implemented as a feature of an operating system environment.

49. The software system of claim 48 wherein the operating system environment is a managed code environment.

50. The software system of claim 36 wherein the software system is implemented in a background service of an operating system environment.

51. A method for developing computer software for a digital image analysis and adjustment system, the method comprising:

receiving a software platform for analyzing and adjusting digital images upon acquisition of the digital images, wherein the software platform comprises a customizable software architecture for adjusting digital image data based on analysis of digital image data; and

creating a custom image adjustment module compatible with the customizable software architecture and operable to add image adjustment functionality to the digital image analysis and adjustment system.

52. A software system providing digital image processing functionality, the software system comprising:

a customizable software architecture for adjusting digital image data based on analysis of the digital image data upon acquisition of digital images from a digital image source, wherein the customizable software architecture is capable of operably coupling one or more image adjustment modules encapsulating image adjustment functions to one or more image analysis modules;

wherein the functionality of the software system is capable of being customized by altering an arrangement of image adjustment modules operably coupled to the one or more image analysis modules.

53. The software system of claim 52 wherein the altering comprises adding image adjustment modules encapsulating image adjustment functions to the software system.

54. The software system of claim 52 wherein the altering comprises changing the functional order of image adjustment modules operably coupled to one another in the software system.

55. A computer-readable medium having computer-executable code for the software system of claim 52.